DOCUMENT RESUME

ED 367 324 IR 054 855

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TITLE Evaluation of Directory Entries for Electronic Journals and Newsletters.
PUB DATE Nov 93
NOTE 59p.; M.L.S. Research Paper, Kent State University.
PUB TYPE Dissertations/Theses - Masters Theses (042) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Access to Information; Case Studies; Comparative Analysis; *Computer Networks; Directories; Electronic Mail; *Electronic Publishing; Evaluation Methods; Indexes; Microcomputers; Research Needs; *Serials; Surveys; *Technological Advancement
IDENTIFIERS *Electronic Journals; Information Superhighway; Internet

ABSTRACT

The goal of the research is to study directory entries for selected electronic journals and newsletters. Directory entries for the first directory of electronic journals and newsletters are analyzed from the user's point-of-view. Completeness of the directory entries, the accuracy of the information they contain, and the accessibility of the entries through an index are three major aspects discussed. Demographics of the current electronic serial industry, scholarly consideration of electronic serials, and a comparison of this directory to directories of print journals and newsletters are also addressed. Case study and survey methodologies are employed. The most significant findings of this research include the internationality of the electronic serial industry; difficulties associated with trying to tame the electronic environment to allow access to electronic serials; problems with trying to locate back issues of electronic serials; the poor quality of the index; and the seriousness with which the scholarly community is beginning to recognize the electronic serial. Suggestions for improving the directory and for future research are presented. The evaluation instrument is appended. (Contains 34 references.) (Author/TMK)

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EVALUATION OF DIRECTORY ENTRIES FOR ELECTRONIC JOURNALS AND NEWSLETTERS

A Master's Research Paper submitted to the

Kent State University School of Library and Information Science

in partial fulfillment of the requirements

for the degree Master of Library Science

by

John C. Teleha

November 1993

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Master's Research Paper by

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B.S., Case Western Reserve University, 1990

M.L.S., Kent State University, 1993

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Adviser Leizhen Wang Date 11/16/93

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ACKNOWLEDGMENTS

I am thankful to Dr. Marcia Lei Zeng for her support, guidance, and encouragement in this project. I also wish to thank Evelyn and Barb Teleha, my mother and my sister, for putting up with me during Graduate School and encouraging me to succeed. Finally, I wish to thank my best friend, Sheri, for encouraging me to complete this paper (ON TIME) and for all the emotional support she's given me. "Love can slip in the side door, the one you didn't know you left open." (Act III of "Poor Richard" by Jean Kerr)

1. INTRODUCTION

1.1 Background

About ten to fifteen years ago, the development of the micro-processor enabled the micro-computer revolution. Computing power greatly increased, while at the same time it was reduced to a size small enough to fit on the corner of one's desk. These personal computers (PCs) changed forever how we handle business and personal information.

Along with this computer revolution, another, more subtle, revolution was taking place. Networking, or the ability to connect to machines at remote (near or far) locations began with companies such as OCLC and Lockheed. The micro-chip revolution allowed networking to achieve its full potential. Interconnecting PCs into local area networks (LANs) allowed users to access files from a remote (but near) mainframe and/or fileserver. The connecting together of LANs led to the creation of wide area networks (WANs). Today, we see this manifested through the implementation of campus wide information systems (CWISs). Technological advancements in the telecommunication fields have also played an important role in the networking revolution. Fibre optics has increased data transmission capabilities to the point that textual, graphical, audio, and full motion video data can all be transmitted over these lines.

All of these revolutions have led to the formation of what is known as the Internet. WANs, CWISs, and even individual PCs are connected via telecommunication lines. This Internet provides unprecedented connectivity among users and access to a tremendous wealth of information. This access seems almost instantaneous (patience is still a necessary virtue, however). The

limiting factors of response time include a combination of the processing power of your own PC, the processing capabilities of the remote site, the time of day you are attempting to contact the remote site (this includes the number of remote access ports available), and ultimately, the integrity of the remote site.

What does all this mean to librarians and the library profession? Computing technologies and WANs have radically changed the ways in which information is created, stored, gathered and disseminated. There now exists a vast wealth of information accessible, literally, at the fingertips. These new resources are datafiles, textfiles, graphical files, electronic journals and newsletters, interactive discussion lists, electronic mail, and bulletin boards. What is necessary to enable a librarian (or any user) to achieve the maximum potential from these new capabilities is an orderly arrangement, or at least an orderly finding tool, of these constantly changing resources. One of the first attempts at such an organization of these resources has been the *Directory of Electronic Journals, Newsletters, and Discussion Lists*. In its third edition in 1993, this work is a product of the intellectual achievements of Michael Strangelove (Ottawa, Canada) and Diane K. Kovacs (and the Directory Team at Kent State University) under the editorship of Ann Okerson and the Association of Research Libraries. As Diane explains it (while paraphrasing Willard McArty):

> "Think of the Old West, where law and order was nonexistent. Travel between towns was hazardous and you did not know what you would find once you got there. Well, there is a new Sheriff in town. Librarians have entered the lawless society and are here to bring order to what at first appears to be only chaos. It's what we do best."[1]

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[1]Diane K. Kovacs (Willard McArty, Professor of English at University of Toronto, Toronto, CA), interview by author, 7 June 1993, Kent, OH, Kent State University.

The function of the directory entries is to provide access to the electronic journals and newsletters. This function was analyzed by this researcher from the user's perspective. Directories have been organized in a manner which facilitates quick access to the information they contain. They have been useful for finding quick access to names, addresses, and other valuable access points. Serials directories have become invaluable reference tools, ever since 1932, when Carolyn Ulrich marketed the first serial directory entitled: *Periodicals Directory: A Classified Guide to a Selected List of Current Periodicals Foreign and Domestic*. As this work has evolved into today's standard, *Ulrich's International Periodicals Directory*, so must the *Directory of Electronic Journals, Newsletters, and Academic Discussion Lists, 3rd edition*, go through some refining processes before the source fully serves the needs of the Internet user. While it is true that print publishing is vastly different from electronic publishing, similar access points will be necessary to ensure that the information is transmitted properly to the user.

1.2 Statement of the Problem

The goal of this research is to study directory entries for selected electronic journals and newsletters. The object under investigation is the *Directory of Electronic Journals and Newsletters*, a portion of the larger reference work the *Directory of Electronic Journals, Newsletters, and Academic Discussion Lists, 3rd edition*. All of the e-journals and e-newsletters were located on the Internet by Michael Strangelove and his associates. This study intends to determine if each e-serial entry's organization, content, and accessibility is adequate or lacking in any respect. A second factor studied includes how useful this tool is as a serials directory and how much improvement may be necessary. A third facet of the research is to provide a

"snap shot" of the e-serial industry. It will be interesting to determine which countries are leading to way in developing e-serials and also which disciplines are involved. A fourth facet will explore if the e-serials are being considered as serious forms of scholarly communication.

Research questions answered through this analysis include, but were not limited to, the following:

Were the *Directory of Electronic Journals and Newsletters* entries complete?

Were the *Directory* ... entries accurate?

Was the index useful and/or in need of improvement?

Who are the major players in the e-serial industry today (1993)?

Are e-serials considered a serious form of scholarly communication?

Could the *Directory* ... be considered the equivalent of a directory for print-journals and newsletters?

1.3. Definitions of Terms

Access point: any unique heading; any heading with a qualifier in an index; any element used as entry to a file.[2]

Archie: an interactive service which provides access to the contents of over 1000 anonymous FTP archive sites.[3]

BBS: Bulletin Board Systems, online message system which can 'post' notices and general information to users of the network.[4]

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[2]Raymond John Prytherch, Harrod's Librarians' Glossary of Terms Used in Librarianship, Documentation, and the Book Crafts and Reference Book, 7th ed., (Brookfield, VT: Gower, 1990), 4.

[3]Diane Kovacs and others, Internet Workshop Workbook for Kent State University Libraries and Media Services Staff, (Kent, OH: Information Services Department, Kent State University, June 7, 1993), 3.

[4]Prytherch, Harrod's, 99.

Electronic journal (e-journal): a subset of electronic serials which are informational in design and attempt to add to the body of knowledge of a disciple through the dissemination of original research or knowledge.[5]

Electronic mail (e-mail): a method of sending messages, mail, information, datafiles, etc. by electronic means. [Used for] Personal exchange, conferences, and newsletters ... communicated quickly and relatively cheaply ...[6]

Electronic newsletter (e-newsletter): a subset of electronic serials which are informational in design and attempt to convey news of special interest to members of societies or organizations. They 'attempt to emulate their print counterparts through organization, periodicity, and topical focus.'[7]

Electronic serial (e-serial): an [electronic] publication intended at the outset to continue indefinitely ... characterized by the intervention of editors, reviewers, and so forth.[8]

Entry: The record of a book publication, or other item in a catalogue or other library record; the physical form of the record on which entries are made.[9]

FTP: File Transfer Protocol, a ... complex program ... which allows the transfer of files from one computer to another.[10]

Gopher: developed at the University of Minnesota, Gopher is an interface software which allows the storage of electronic texts for interactive searching, viewing, and retrieval.[11]

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[5]Michael Strangelove, "Electronic Journals and Newsletters, Introduction." Directory of Electronic Journals, Newsletters and Discussion Lists, 3rd ed., (Washington, DC: Association of College and Research Libraries, 1993), 53.

[6]Prytherch, Harrod's, 218.

[7]Strangelove, "Electronic", 53.

[8]Ibid..

[9]Prytherch, Harrod's, 223.

[10]Ed Krol, The Whole Internet: User's Guide and Catalog. (Sebastopol, CA: O'Reilly & Associates, Inc., 1992), 59.

[11]Kovacs, Internet Workshop, 5.

HYTELNET: [hypertext] software that provides flexible connections to a variety of networked information resources.[12]

Internet: an amalgamation of individual, campus, state, regional, and national networks into one single logical network all sharing a common addressing scheme.[13]

Journal: a newspaper or periodical; Particularly, a periodical issued by a society or institution containing news, proceedings, transactions and reports of work carried out in a particular field.[14]

LAN: Local Area Network, any physical network connections which operates at high speed over short distances.[15]

Listserv: a software system for maintaining mailing lists (and more) without human intervention on IBM/VM machines.[16]

Network: a group of machines connected together so they can transmit information to one another.[17]

Newsletter: a brief publication conveying news; frequently issued by societies or organizations.[18]

NREN: National Education Resources Network, envisioned as an expansion and enhancement of the Internet; referred to as the "information superhighway"; passed into Law through the *High-Performance Computing act of 1979*.[19]

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[12]Ibid.

[13]Brendan P. Kehoe, Zen and the Art of the Internet: A Beginner's Guide to the Internet. 2nd ed. (Englewood Cliffs, NJ: Prentice Hall. 1993) : 102.

[14]Prytherch, Harrod's, 343.

[15]Kehoe, Zen, 102

[16]Krol, Whole Internet, 121.

[17]Kehoe, Zen, 103.

[18]Prytherch, Harrod's, 432-3.

[19]Ann P. Bishop, The National Research and Education Network (NREN): Update 1991, (Syracuse, NY: ERIC Clearinghouse on Information Resources, December, 1991).

NSFNet: the national backbone network, funded by the National Science Foundation, used to interconnect regional networks.[20]

Serial: a publication intended at the outset to continue indefinitely. It is characterized by its organization, periodic, and topical focus.[21]

WAIS: Wide Area Information Servers, a client/server software providing searching and retrieval of databases.[22]

WAN: Wide Area Network, a network spanning hundreds or thousands of miles.[23]

1.4 Limitations

The entries were analyzed by means of a standard model. A large assumption was that the same information necessary to provide access to print journals and newsletters was necessary to provide access to e-journals and e-newsletters. This information needed to be "translated" from print to electronic publishing terminology, but the underlying intellectual access points remained the same. The study was limited to the entries found in the *Directory of Electronic Journals and Newsletters* section of the *Directory of Electronic Journals, Newsletters, and Academic Discussion Lists, 3rd edition*. This reference tool was published in April 1993, thus it was limited to e-serials which had been located on the Internet prior to that date. This tool attempted to cover all e-serials available over the Internet.

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[20]Kehoe, Zen, 103.

[21]Strangelove, "Electronic", 53.

[22]Kovacs, Internet Workshop, 6.

[23]Kehoe, Zen, 105.

2. LITERATURE REVIEW

2.1 History

The term "Internet" appeared in the literature only five years ago, even though networking, itself, had been around since the late 1960s. Several articles have been written which trace the development of the Internet. Perry and others[24] traced the history of the Defense Department's WAN from its origins in 1969, through its 1970's evolution, and to its 1988 uses. Catlett[25] chronicled its history during the 1980s as the network evolved into the NSFNet, linking super computer centers founded by the National Science Foundation. Arms[26] discussed the histories of the BITNET and Internet networks as well as the , then proposed, NREN. Bishop[27][28] discussed not only the history of networking and the needs which brought about the NREN legislation, but also the current status and the educational/research related implications of the *High-Performance Computing Act of 1991*, which codified the NREN legislation.

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[24]Dennis G. Perry and others, "The ARPAnet and DARPA Internet", Library Hi-Tech, 6:2 (1988) : 51-62.

[25]Charles E. Catlett, "The NSFNet: Beginnings of a National Research Internet," Academic Computing, 3:5 (January 1989) : 19-21, 59-64.

[26]Caroline R. Arms, "A New Information Infrastructure," Online 14:5 (September 1990) : 15-22.

[27]Bishop, National Research.

[28]Bishop, Update 1991.

Other articles which traced the development of the Internet and NREN included: Corbin[29], Roberts[30], Chapin[31], and Weis[32].

2.2 Guidebooks

Four books have been published in the last two years which orient the user to the Internet. Krol[33] updated his popular user's guide. Besides having defined in basic, intermediate, and advanced terms the navigational tools and commands necessary to access the Internet, he also provided a short catalog of Internet Resources. Kehoe[34] provided a work with two purposes: it served as a foundation for exploring the Internet and as a quick reference guide. Tennant, Ober, and Lipow[35] provided the necessary tools and commands for getting the most out of the Internet. Like Krol, they explained, in concise terms, the tools necessary for navigating the Internet. Malamud[36] added his own unique touches as he took one on an international tour of Internet accessible sites.

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[29]Roberta A. Corbin, "The Development of the National Research and Education Network," Information Technology and Libraries, 10:3 (September 1991) : 212-20.

[30]Michael Roberts, "A Political Perspective on the Internet and NREN," Computers in Libraries, 12:5 (May 1992) : 58-61.

[31]A. Lyman Chapin, "The Internet Architecture Board and the Future of the Internet," EDUCOM Review, 27:5 (Sep-Oct 1992) : 42-5.

[32]Allan H. Weis, "Commercialization of the Internet," Electronic Networking: Research, Applications, and Policy, 2:3 (Fall 1992) : 7-16.

[33]Krol, Whole Internet.

[34]Kehoe, Zen.

[35]Roy Tennant, John Ober, and Anne G. Lipow, Crossing the Internet Threshold: An Instructional Handbook, (Berkeley, CA: Library Solutions Press, 1993).

[36]Carl Malamud, Exploring the Internet: a Technical Travelogue, (Englewood Cliffs, NJ: Prentice Hall, 1993).

2.3 Navigation Tools

Navigational tools for the Internet have been more recent developments. Very few articles have been published which discuss them. Tennant[37] discussed briefly the tools Gopher, WAIS, and the future World Wide Web. Scott[38] described the hypertext utility HYTELNET and the resources it provides for IBM users. This utility began an electronic guide to OPACs and has been developed into an electronic directory of Internet sites. Gopher, an electronic document distribution system, was discussed in an article by Nickerson[39]. Deutsch[40] described the resource discovery problems which led to the conceptual idea for Archie, an electronic indexing service used to locate documents on the Internet. Archie was still "under construction" because the legal and technical boundaries were always moving. Finally, Lukanuski[41] described WAIS, a system which was developed to allow users to access all types of electronic information from one system's interface.

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[37]Roy Tennant, Internet Basics, (ERIC Clearinghouse on Information Resources, Syracuse, NY., 1992.).

[38]Peter Scott, "Hytelnet as Software for Accessing the Internet: A Personal Perspective on the Development of Hytelnet," Electronic Networking: Research, Applications and Policy, 2:1 (Spring 1992) : 38-44.

[39]Gord Nickerson, "The Internet Gopher," Computers in Libraries, 12:8 (September 1992) : 53-6.

[40]Peter Deutsch, "Resource Discovery in an Internet Environment -- The Archie Approach," Electronic Networking: Research, Applications and Policy, 2:1 (Spring 1992) : 45-51.

[41]Mary Lukanuski, "Help Is on the WAIS," American Libraries, 23:9 (October 1992) : 742-4.

2.4 Organizational Research

The need for a conceptual ordering of the information available on the Internet has been addressed only recently. Dalton[42] discussed the need for more electronic and, especially, print directories. She also discussed the need to standardize the data elements necessary for finding information on the network. Kalin[43] discussed the librarian's role in determining access concerns. Nickerson[44] described how library applications may be translated into an Internet environment. Bailey[45] touched on issues surrounding e-serials available over the Internet. Ownership, access, how to handle the processing of such, and the future of e-serials were all discussed. Polly[46] described the vast resources of information available over the Internet, these resources included e-newsletters and e-serials. Brett[47] discussed both print media resources for the Internet and possible improvements for making networks more accessible. Dillon, Jul, Burge, and Hickey[48] described a project which, after examining

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[42]Marian L. Dalton, "Does Anybody Have a Map? Accessing Information in the Internet's Virtual Library," Electronic Networking: Research, Applications and Policy, 1:1 (Fall 1991) : 31-9.

[43]Sally W. Kalin and Roy Tennant, "Beyond OPACs: the Wealth of Information on the Internet," Database, 14:4 (August 1991) : 28-33.

[44]Gord Nickerson, "Networked Resources: The Internet," Computers in Libraries, 11:8 (September 1991) : 25-9.

[45]Charles W. Bailey, Jr., "Network-Based Electronic Serials," Information Technology and Libraries, 11:1 (March 1992) : 29-35.

[46]Jean Armour Polly, "Surfing the Internet: An Introduction," Wilson Library Bulletin, 66:10 (June 1992) : 38-42.

[47]George H. Brett, II, "Navigating the Internet: A Beginning," North Carolina Libraries, 50:3 (Fall 1992) : 143-6.

[48]Martin Dillon and others, Assessing Information on the Internet: Toward Providing Library Services for Computer Mediated Communication, (Dublin, OH: OCLC Online Computer Library Center, Inc., 1993).

textual information available on the Internet, proposed an automated method of categorizing and cataloging files. Finally, Lynch and Preston[49] discussed the need for updating classification schemes and bibliographic description elements to include concepts unique to the electronic environment.

There is a need for tools such as the *Directory of Electronic Journals, Newsletters, and Discussion Lists, 3rd edition*, 1993. But it is not enough to just provide access. These tools should be well organized and provide all necessary information for accessing these electronic resources. This study analyzed this directory and provides a focus for future improvements.

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[49]Clifford A. Lynch and Cecilia M. Preston, "Describing and Classifying Networked Information Resources," Electronic Networking: Research, Applications and Policy, 2 (Spring 1992) : 13-23.

3. METHODOLOGY

3.1 Methods

Analyses are important research tools. Through them, we recognize the accomplishments which have been made and project realistic expectations for the future. The analysis of the *Directory of Electronic Journals and Newsletters* component of the *Directory of Electronic Journals, Newsletters, and Discussion Lists, 3rd edition* was completed via a combination of Case Study and Survey methodologies. These methods were chosen because: first, the analysis was of a specific item, hence a case study was appropriate and second, the size of the *Directory of Electronic Journals and Newsletters* was large, so a sample was analyzed and the results of that analysis were transferred to the whole list, thus a survey was also appropriate.

3.2 Population and Sample Population

The population analyzed consisted of 240 numbered entries in the *Directory of Electronic Journals and Newsletters*. A random sample of sixty items was analyzed. This sample was obtained by using a table of random numbers. The *Directory of Electronic Journals and Newsletters* had already numbered the entries from 1 to 240. These numbers were translated to the range 001 to 240. As the table was scanned, three digit numbers matching the entries were encountered. Thus, entries which matched the encountered numbers became part of the sample. The random number table was scanned until the sample population of sixty was reached.

3.3 Data Collection

Analysis of the sample population occurred via four methods. First, the sample population was analyzed via an instrument designed to determine the accessibility and accuracy of the entry. This instrument examined access points such as the title, scope notes, ISSN numbers, frequency, subscription requirements, and other points normally encountered in a "standard" periodical or newsletter directory. Secondly, the sample entries were subscribed to by the researcher. The subscription verification notices received in response were also examined to determine the accuracy of the entries. Thirdly, the index of the *Directory of Electronic Journals, Newsletters, and Discussion Lists, 3rd edition* was analyzed to determine its adequacy for retrieving the sample entries. Finally, other directories were consulted to determine if the e-serials are being treated as a serious form of scholarly communication, or if Strangelove's *Directory* ... is the only one listing them.

3.4 Analysis of Data

The research results have been tabulated, statistically analyzed, and the percentage of each specific research element has been determined. These results have been arranged in tables displaying the records' information. From these tables, conclusions have been drawn regarding the usefulness of this tool, how much improvement is necessary, and the state of the e-serial industry.

4. RESEARCH RESULTS

4.1 Entry Analysis

The entries for the *Directory of Electronic Journals and Newsletters* follow a standard format devised by Michael Strangelove and his associates[50]. The following is a sample entry, listing all of the possible access points, compared with their print directory[51] counterparts.

TABLE 1
Sample Entries

Electronic Serials	Paper Serials
Title:	Main Entry Title; Subtitle; Title Changes:
Confirmed Date:	(None)
ISSN Number:	ISSN Number:
Free?:	Price:
First Date of Electronic Issue:	First Published:
Peer Reviewed or Refereed?:	Refereed:
Formats:	Format:
Distribution:	(None)
Periodicity:	Frequency:
Description:	Brief Description:
Subscription/Access:	Subscription address:
Back Issues:	(None)
Contact:	Editor; Publisher:
Institutional Affiliation:	Sponsoring Body:
Sources: Strangelove, "Electronic", 54.	Ulrich's, xi.

Many of the entry terms listed in Table 1 are obvious, but others are new to the world of electronic resources. "Title" refers to the name at the beginning of the electronic document. This name is generally chosen for uniqueness and to suggest some subject matter of the materials which follows. Abbreviations and acronyms used as a title are often followed by an explanatory subtitle.

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[50]Strangelove, "Electronic", 54.

[51]Ulrich's International Periodicals Directory, 31st ed., 1 (New Providence, NJ: R.R. Bowker, 1992-93) : xi.

"Confirmed Date" refers to the date that Strangelove, or an associate, located the item on the Internet and verified its authenticity. The International Standard Serial Number, or "ISSN Number," uniquely identifies the serial from other serials which have the same title. The "Free?" field indicates whether or not one will be billed/charged for subscribing to the title. While the vast majority of items accessible over the Internet are free, some are not.

When an item is located, all the back issues and/or the editor are consulted. From this information, the "First Date of Electronic Issue" is determined. "Peer Reviewed or Refereed" will set apart those items which are scholarly oriented from those which are not. (This will become more important in the future as the rules for granting tenure will also be changing.) "Formats" refers to the code in which the computer file is written. The vast majority of text documents available over the Internet are written in ASCII. Thus, they are transferable to any computer and/or word processing program. The manner in which the document is delivered is noted in the "Distribution" field. Common methods of delivery include:

1) e-mail and Listserv, where the document is delivered to an account;
2) FTP and Gopher, where the user must initiate retrieval; and
3) diskette or hard copy, where the editor sends the requested information through conventional mail.

"Periodicity" describes the frequency with which one can expect item delivery. Standard frequencies include: daily; weekly; monthly; quarterly; and annually. Since the publishing procedures in the electronic environment are not as rigidly structured as those in the print, these hard-fast frequencies sometimes blend together into slightly more irregular distribution patterns. The "Description" usually includes a scope note, indicating subject coverage or

other informative material. The "Subscription/Access" field provides the necessary information to receive items on a regular basis or access individual issues/articles. Common subscription information includes the e-mail address of either the editor or the Listserv.

The "Back Issues" field provides vital information as to the location of old issues of the e-serial. For many of the entries, the address for retrieving the back issues is very similar to the address for subscription. Many titles are located at more than one computer address, thus facilitating retrieval if problems arise at the one site. "Contact" is akin to the editor or publisher of the e-serial. S/he is the person responsible for posting the e-serial and/or maintaining access to the archived materials. Often, a regular mailing address is included along with the e-mail address. Finally, "Institutional Affiliation" refers to the academic, government, or corporate entity which supports in some way the efforts to produce the e-serial. In reality, very few entries are this complete. Thus, many of these fields are nonexistent in many of the records.

Table 2 gives a general overview of the demographic features associated with the e-serials. The "Material Type" was determined from the numbering scheme used by Strangelove and his associates[52]. The first 44 items in his list are the e-journals while the remainder of the 240 entries are the e-newsletters. The "General Subject" of the material is studied to find out which broad subject areas are publishing the most e-serials. The "Country of Origin" is examined to determine the geographical concentration for the publishing of e-serials.

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[52]Strangelove, "Electronic", 47-51.

TABLE 2
E-Serial Demographics

Characteristic	N	*f*	Percent
Material Type:			
e-journal		14	23.3%
e-newsletter		46	76.7%
Total	60	60	100.0%
General Subject:			
Business		5	8.3%
Humanities		8	13.3%
Interdisciplinary		12	20.0%
Sciences		20	33.3%
Social Sciences		15	25.0%
Total	60	60	100.0%
Country of Origin:			
Brazil		1	1.7%
Canada		4	6.7%
Cuba		1	1.7%
Hungary		1	1.7%
Poland		2	3.3%
Russia		3	5.0%
Tunisia		1	1.7%
USA		46	76.7%
Yugoslavia		1	1.7%
Total	60	60	100.0%

The analysis of the Material Type shows that e-journals make up 14 or 23.3% of the sample. While the 44 e-journals in the population represent only 18.3% of that population, the sample was selected randomly and the e-newsletters had just as much chance to have a higher representation. The remaining 46 or 76.7% of the sample population consists of e-newsletters. This compares to 81.6% of the population being e-newsletters (196 of 240).

The analysis of the General Subjects provides interesting results. The publishing of e-serials is not heavily dominated by one segment of academia. The hard sciences and technological e-serials comprise 20 or 33.3% of the e-serials studied. The social science based e-serials comprise 15 or 25% of the study. The interdisciplinary e-serials represent those items which cannot be placed clearly into one of the other four categories. Either they cover many

broad subjects or they cover at least two different subjects with equal emphasis. This category may be the most subjective group of the five. Twelve or 20.0% of the e-serials fall into this category. The humanities' e-serials comprise eight or 13.3% of the study. (This is exciting because many libraries and universities are being forced to delegate more funds towards the sciences and away from the humanities.) The smallest group represented in the study are the business e-serials. They comprise five or 8.3% of the study.

The Country of Origin analysis also provides some intriguing results. The United States is not the only player in the e-serial market. in fact, with 46 items in the study, the United States publishes only 76.7% of the e-serials. The

TABLE 3
Material Type Analysis

Characteristic	e-journal	Percent	e-newsletter	Percent
General Subject:				
Business	0	0.0%	5	10.9%
Humanities	4	28.6%	4	8.7%
Interdisciplinary	4	28.6%	8	17.4%
Sciences	4	28.6%	16	34.8%
Social Sciences	2	14.3%	13	28.3%
Total	14	100.0%	46	100.0%
Country of Origin:				
Brazil	0	0.0%	1	2.2%
Canada	3	21.4%	1	2.2%
Cuba	0	0.0%	1	2.2%
Hungary	0	0.0%	1	2.2%
Poland	0	0.0%	2	4.3%
Russia	0	0.0%	3	6.5%
Tunisia	0	0.0%	1	2.2%
USA	11	78.6%	35	76.0%
Yugoslavia	0	0.0%	1	2.2%
Total	14	100.0%	46	100.0%
USA E-serials by General Subject:				
Business	0	0.0%	2	5.7%
Humanities	2	18.2%	4	11.4%
Interdisciplinary	3	27.2%	6	17.1%
Sciences	4	36.4%	13	37.2%
Social Sciences	2	18.2%	10	28.6%
Total	11	100.0%	35	100.0%

second largest e-serial publisher is Canada with four or 6.7%. Third is Russia with three or 5.0%. The last country with multiple entries in the study is Poland. Its two entries comprise 3.3%. Five countries each had a single entry or 1.7% in the study. These five countries are: Brazil, Cuba, Hungary, Tunisia, and Yugoslavia. Table 3 includes an analysis of the General Subjects and Country of Origin based on the Material Types.

When one breaks down the General Subject by Material Type, the following important trends exist. The e-journals are equally distributed between the sciences, the humanities, and the interdisciplinary studies. Each of these groups have four or 28.6% of the 14 e-journals in the study. The remaining two or 14.3% of the e-journals are from the social sciences. There were no (zero or 0.0%) business e-journals in the sample. The sciences comprise 16 or 34.8% of the 46 e-newsletters in the study. Close behind are the social sciences with 13 or 28.3% of the e-newsletter study group. The interdisciplinary e-newsletters fell off to eight or 17.4% of the sample. All five of the business related items in the study are e-newsletters. They comprise 10.9% of the e-newsletters studied. Finally, The humanities are evenly divided between the e-journals and the e-newsletters. Thus, four or 8.7% of the newsletters are from this group.

Analysis of the Country of Origin by Material Type finds that the entries from Brazil, Tunisia, and Yugoslavia are all science e-newsletters. Cuba publishes an interdisciplinary e-newsletter, Hungary a business e-newsletter, and Poland two social science e-newsletters. Russia's three e-newsletters are divided: two are business and one is social science. Canada is the only country other than the United States to publish e-journals and have them represented in this study. Of the four items that Canada publishes, three are e-

journals (two humanities related and one interdisciplinary) and one is an interdisciplinary newsletter. Finally, Table 3 shows that the United States offers the widest variety of e-serials present in this study. "USA E-serials by General Subject" refers to the 46 e-serials published by the United States. Of the 11 US e-journals published, four are science related, three are interdisciplinary, two are humanities, and two are social science. The 35 United States e-newsletters are broken by the following numbers: science 13; social science ten; interdisciplinary six; humanities four; and business two. An interesting footnote is that more business e-newsletters are published outside the United States. than in the United States (at least according to this sample).

With Table 4, the analysis of the information portrayed by the entries now begins. This table breaks down the information regarding the title and scope note portions of the entry.

TABLE 4
Title Analysis

Characteristic	N	*f*	Percent
Clear, Descriptive Title:			
Yes		30	50.0%
No		30	50.0%
Total	60	60	100.0%
Subtitle Present:			
Yes		20	33.3%
No		40	66.7%
Total	60	60	100.0%
Title Change:			
Yes		10	16.7%
No		50	83.3%
Total	60	60	100.0%
Scope Note, Description:			
Yes		59	98.3%
No		1	1.7%
Total	60	60	100.0%

"Clear, Descriptive Title" is defined as the ability of the title to stand alone and portray a concise meaning. Only 30 or 50.0% of the entries contain a Clear, Descriptive Title (referred to hereafter as "Title"). The titles are not acronyms, abbreviations, or compound words meant to be creative or unique. These 30 titles convey the subject of the e-serial without the need of an explanatory subtitle or scope note. "Subtitle Present" refers to the existence of other title information in addition to the Title. Subtitles appear in 20 or 33.3% of the entries. Fourteen of these Subtitles occur with the 30 Clear, Descriptive Titles while six aid in explaining six of the 30 nondescriptive titles. "Title Change" refers to the serial publishing industry's practice of calling a serial by a new title while keeping the volume count continuous. Ten or 16.7% of the entries mention a Title Change somewhere in the entry. Usually this information is in the scope note or the access fields. Some of the title changes are merely the addition of the word "online" to the print version of the e-serial, e.g. *Music Theory Online (MTO)*. Almost all (59 or 98.3%) of the items have a "Scope Note, Description," an explanatory paragraph meant to inform the user of the purpose of, the audience for, or special characteristics of the e-serial. The one or 1.7% which did not contain a good Scope Note simply repeated the inadequate title.

Table 5 shows the analysis of the serial information useful for indicating the scholarly nature of the e-serial and other important features of a standard serial record.

TABLE 5
Scholarly and other Serial Data Analysis

Characteristic	N	*f*	Percent
Audience Indicated:			
Yes		20	33.3%
No		40	66.7%
Total	60	60	100.0%
First Publication:			
Yes		48	80.0%
No		12	20.0%
Total	60	60	100.0%
ISSN Number:			
Yes		21	35.0%
No		39	65.0%
Total	60	60	100.0%
Refereed or Peer Reviewed:			
Yes		9	15.0%
No		51	85.0%
Total	60	60	100.0%
Institution Affiliated:			
Yes		22	36.7%
No		38	63.3%
Total	60	60	100.0%

"Audience Indicated" describes those e-serials which are targeted toward a specific subject and/or intellectual level of reader. The analysis shows that only 20 or 33.3% of the entries indicate a target audience. This information is carried in the Scope Note (see Table 4). Another facet important to e-serial records is the date of "First Publication," an indicator of when the e-serial was established as a unique entity. Only 48 or 80.0% of the entries analyzed contain this information. This means that Strangelove and his associates were able to determine when these items began publication. This is unfortunate for the 12 or 20% for which the First Publication is not found, because the information on previous issues may be lost or irretrievable. One way in which the international serial community chooses to control the overabundance of serial publications which proliferate under the same or similar names is to

assign each title a unique "ISSN Number" (International Standard Serial Number). E-serials which are scholarly in nature and forward thinking have also applied for this number. Of the e-serials analyzed in this study, 21 or 35.0% have already received the ISSN Number and another six or 10.0% have applications pending at the time that the directory was published. This is one facet which should increase in the next print edition of the directory.

Many tenure-track faculty members need to have articles published in journals which are "Refereed or Peer Reviewed." This means that one person or a team has examined the article before accepting it for publication. Any articles which are published are assumed to be of a scholarly nature. E-journals are beginning to become established as Refereed or Peer Reviewed entities. Analysis of the entries indicates that nine or 15.0% are Refereed. All are e-journals. This also indicates that 9 or 64.3% of the 14 e-journals in the study are Refereed. (Does this mean that only those individuals seeking new forms of scholarly communication and looking for tenure are establishing e-journals? This is not a question which can be answered through this study.) Another aspect of scholarly publication is having an "Institution Affiliated" with the serial. The Institution Affiliated refers to a university or a corporate entity taking responsibility in the publication of the e-serial. This ensures that funding for the e-serial will continue. Twenty-two or 36.7% of the e-serials have this backing. These e-serials have more "clout" behind them and are more likely to survive financial crises than those without such backing.

Analysis of Table 6 shows the characteristics involved with some aspects of the physical delivery of the e-serials. These are the more tangible characteristics of Periodicity, Size, Circulation Size, and Price.

TABLE 6
Periodicity, etc. Analysis

Characteristic	N	*f*	Percent
Periodicity (Frequency):			
Irregular		18	30.0%
Semiannually		2	3.3%
Quarterly		8	13.3%
Bimonthly		7	11.7%
Monthly		11	18.3%
Semimonthly		4	6.7%
Weekly		5	8.3%
Semiweekly		2	3.3%
Daily		3	5.0%
Total	60	60	100.0%
Size of the File:			
Yes		1	1.7%
No		59	98.3%
Total	60	60	100.0%
Size of Circulation:			
Yes		1	1.7%
No		59	98.3%
Total	60	60	100.0%
Price:			
Yes		6	10.0%
No		54	90.0%
Total	60	60	100.0%

Like their print counterparts, e-serials arrive not only at frequent, expected intervals but also at irregular, unexpected intervals. The "Periodicity" portion of the entries indicates eight regular frequencies and one irregular frequency. The frequencies are listed from the most infrequent to the most frequent. There are 18 or 30.0% of the entries which listed an Irregular frequency. From some of the notes, these items come out anywhere from "three week intervals" or "mostly monthly" to "three to four times yearly." Only two or 3.3% of the items list a Semiannually frequency. Most of the e-serials are much more frequent than this. A Quarterly frequency is indicated for eight or 13.3% of the entries. Bimonthly is the indication for seven or 11.7% of the entries. Eleven or 18.3% have Monthly frequencies (the second highest). Four or 6.7%

entries publish on a Semimonthly basis. Weekly distribution is indicated on five or 8.3% of the entries. Only two or 3.3% of the entries list Semiweekly frequencies. Finally, three or 5.0% of the entries update on a daily basis. These items are two business datafiles from Eastern Europe and a news update from Cuba.

Only one or 1.7% entry lists a "Size of the File" delivered. This one is a business file from Eastern Europe. The editor wants the subscribers to understand that they will be receiving 30K of information on a daily basis. Size is more of a concern in the print environment, but if more publishers include an "expected file size" in their record, the subscribers will know if they have adequate space to receive the information. The "Size of Circulation" is an important factor in the viability of the print serial. It is an indicator of the market share a journal holds over competing titles. Analysis of the entries indicates that this factor is either not as important in the e-serial market, or perhaps it is not as easy to determine. Only one or 1.7% indicates a Size of Circulation. This item compared its print circulation to the number of electronic subscribers in the Scope Note.

Analysis of the "Price" indicator shows some interesting factors. Six or 10.0% of the entries indicate that there is a Price involved in the delivery of the e-serial. Three of the entries indicate that the price is charged only for print versions of the e-serial. The two items which are available via diskette (see Table 7) indicate that the only charge is for the price of the diskette and mailing fees. The most outrageous Price involves a business e-newsletter distributed via FAX and e-mail. One wonders why the editor is charging $198.00 a year for the weekly e-newsletter when most in the academic community (54 or 90.0%) are not charging at all.

TABLE 7
Distribution Analysis

Characteristic	N	*f*	Percent
Method of Distribution:			
BBS (Bulletin Board Systems)	60	11	18.3%
Diskette	60	2	3.3%
e-mail	60	33	55.0%
FAX	60	3	5.0%
FTP	60	25	41.7%
Gopher	60	11	18.3%
Hard Copy	60	13	21.7%
Listserv	60	24	40.0%
WAIS	60	3	5.0%
Multi Method of Distribution:			
Yes		41	68.3%
No		19	31.7%
Total	60	60	100.0%
Number of Distribution Methods:			
One		19	31.7%
Two		26	43.3%
Three		7	11.7%
Four		7	11.7%
Five		1	1.7%
Total	60	60	100.0%
Multi Format:			
Yes		20	33.3%
No		40	66.7%
Total	60	60	100.0%
Subscription Address Present:			
Yes		59	98.3%
No		1	1.7%
Total	60	60	100.0%
Back Issues Retrievable:			
Yes		34	56.7%
No		26	43.3%
Total	60	60	100.0%

Analysis of Table 7 shows the more intangible characteristics involved with some aspects of the physical distribution of the e-serials: Method of Distribution; Format; Subscription Address; and Back Issues. Analysis of the entries indicates that there are nine major "Methods of Distribution" for e-serials. Bulletin Board Systems (BBS) are the method chosen by 11 or 18.3% of the

items analyzed. Only two or 3.3% of the entries indicate that they offer Diskette as a option. The editors of these two titles will mail the subscriber formatted diskettes containing the e-serial. The most popular Method of Distribution is e-mail. The e-serial is delivered directly to the subscribers account on a local or university mainframe. Thirty-three or 55.0% of the e-serials use this Method. FAX is a fairly new option for e-serials. Only three or 5.0% of the entries analyzed use this Method. FTP is the second most popular Method of Distribution for e-serials. This Method requires that the user initiate the retrieval process. It is analogous to a user coming to the library to read a print journal or newspaper. The files reside on remote mainframes and the user must know the exact address to reach the mainframe. The FTP software allows the access and retrieval of these files. Twenty-five or 41.7% of the e-serial entries analyzed offer this Method. Gopher is a Method of Distribution related in part to FTP. The major difference is that Gopher provides a searching mechanism as well as a retrieval mechanism. One does not need to know where the item is stored. Gopher is available for 11 or 18.3% of the e-serials analyzed. Many of the e-serials offer Hard Copy distribution for those subscribers who do not have e-mail accounts. This is important because one should not be deprived of access to information simply because of the lack of the appropriate technology. Thirteen or 21.7% of the entries offer this Method. Analogous to e-mail and BBS, the Listserv Method of Distribution delivers the e-serial directly to the e-mail account. This Method is used by 24 or 40.0% of the e-serials analyzed. Finally, a new player in the e-serial distribution market is the WAIS server. This Method is a direct competitor with Gopher. Only three or 5.0% of the e-serials use this Method.

Distribution analysis indicates that 41 or 68.3% of the entries offer a "Multi Method of Distribution." These 41 e-serials recognize that in the electronic environment, more options mean more accessibility. Only 19 or 31.7% of the entries offer a solitary Method to access the e-serial. This is important for several reasons. The e-serials available via e-mail, Listserv, and BBS are delivered directly to e-mail accounts. If one does not have an e-mail account, these methods would not be an option. Gopher, FTP, and WAIS, while they do not require e-mail accounts to access materials, an account of some sort on a mainframe is necessary to be able to retrieve to desired items. FAX, Diskette, and Hard Copy all allow access to individuals who do not have the above mentioned capabilities. "Number of Distribution Methods" refers to the total number of ways a user can access the e-serial (referred to hereafter as "Number"). The most common Number is "Two." Twenty-six or 43.3% of the entries offer this many methods. As mentioned above, 19 or 31.7% of the e-serials offer only "One" Number. Seven or 11.7% of the e-serials coincide to both "Three" and "Four" Numbers. These two Numbers are responsible for the majority of the alternate format delivery mechanisms (Hard Copy, FAX, and Diskette). There is one or 1.7% e-serial which offers "Five" Distribution Methods.

One may think that all e-serials are written in the same format (electronic). While it is true that the literature discerns "electronic" form "print," the electronic format can be broken down into the type of file or the software used to create/read the file. Two-thirds of the e-serials studied (40 or 66.7%) offer only one "Format." This Format is ASCII. These e-serials are only text-files, so the ASCII format is very appropriate for distribution. Twenty or 33.3% of the e-serials are distributed in Multi-Format. Eighteen of the e-serials offer a

printed version(Hard Copy or FAX) or Postscript version (Diskette). The other two are very unique e-serials. The *Braille Forum* offers what appears to be a binary file which way be an encoded Braille file. This e-serial would require more software to decode the binary file. Finally, *Music Theory Online* is distributed as a combination of text and GIF files. The GIF files are musical examples meant to enhance the text. This is the first indication of a true hyper-media e-serial.

"Subscription Address" refers to the existence of an e-mail address which the user can write to and begin receiving the item. Between e-mail, Listserv, and BBS, 59 or 98.3% of the e-serials are able to accept subscription requests. Only one or 1.7% of the e-serials does not include a Subscription Address in its entry. This item indicates that it is available only via back issues. It does not "deliver" copies to subscribers, thus it does not have any mechanisms which allow users to "subscribe." It is only available via FTP. The last characteristic covered in this table is the "Back Issues Retrievable." This refers to the ability to access an issue of an e-serial which was "published" weeks, months, even years before. Thirty-four or 56.7% of the e-serials make their back issues accessible. The common methods for retrieving back issues include: FTP; Gopher; WAIS; Listserv; and requesting from the editor via e-mail. Although it is easier to access back issues of e-serials, the archiving of e-serials and making them more readily accessible are two areas in need of improvement.

TABLE 8
Editor, Contact Person Analysis

Characteristic	N	*f*	Percent
Name:			
Yes		55	91.7%
No		5	8.3%
Total	60	60	100.0%
Address:			
Yes		57	95.0%
No		3	5.0%
Total	60	60	100.0%
Telephone Number:			
Yes		14	23.3%
No		46	76.7%
Total	60	60	100.0%

Table 8 displays the analysis of the Editor and/or Contact Person portions of the e-serial entries. "Name" refers the identification of a real person and not just an anonymous or corporate address. An individual is named for 55 or 91.7% of the entries. For the remaining five or 8.3%, only a corporate name or no name is mentioned. "Address" is counted if there is either an e-mail or postal address for the editor or corporate body publishing the e-serial. Fifty-seven or 95.0% of the entries include either this e-mail or postal. The remaining three or 5.0% of the entries list only an e-mail address that includes the acronym for the title. This could probably be considered more of a "business address," freeing up the editor's e-mail address for personal, non-e-serial related business. Finally, only 14 or 23.3% of the entries listed a Telephone Number for the Editor and/or Contact Person.

4.2 Subscription Notice Analysis

Accuracy is important in directories of any kind. Thus, a part of the research is to determine the accuracy of the e-serial entries in the *Directory of Electronic Journals and Newsletters*. This section explains the results of this

analysis. The e-serials were physically (in electronic terms) located based on the information available in the entries. Table 9 records the results of this analysis .

TABLE 9
Subscription Notice Analysis

Characteristic	N	*f*	Percent
E-serial Located:			
Yes		43	71.7%
No		4	6.6%
Waiting for Response		13	21.7%
Total	60	60	100.0%
Title Accurate:			
Yes		32	76.2%
No		10	23.8%
Total	42	42	100.0%
Scope Note Accurate:			
Yes		33	76.7%
No		10	23.3%
Total	43	43	100.0%
Frequency Accurate:			
Yes		35	81.4%
No		8	18.6%
Total	43	43	100.0%
Distribution Methods Accurate:			
Yes		37	82.2%
No		8	17.8%
Total	45	45	100.0%
Subscription Accurate:			
Yes		35	74.5%
No		12	25.5%
Total	47	47	100.0%
Back Issue Retrieval Accurate:			
Yes		22	46.8%
No		25	53.2%
Total	47	47	100.0%
Contact Information Accurate:			
Yes		41	97.6%
No		1	2.4%
Total	42	42	100.0%

The "E-serials Located" indicator explains whether or not the e-serial is able to be located through the directions found in the entries. Only 43 or 71.7% of the e-serials are locatable directly via the information indicated. Four e-serials were not locatable via the information provided. Either the e-mail address, the Listserv address, or the FTP site address has changed. Another 13 or 21.7% of the e-serials may be locatable. These items are mostly e-newsletters which are delivered by e-mail. This researcher sent e-mail messages to these 13 editors and by the time of this publication, they had not responded. This explains why most of the **N** (responses) columns in Table 9 do not add up to 60, the size of the sample population. The minimum responses in this Table is 42. This does not match with the 43 items Located because even though the *Braille Forum* was able to be located, certain portions of its entry are not verifiable (the Title and the Contact Person) based on its binary file structure. While the accuracy could not be proven for many aspects of the four non-located items, these items could at least be analyzed to determine if the addresses for Subscription and Back Issue Retrieval were accurate. Thus, the Totals range between 42 and 47 for this Table. Four e-serials of the 43 located have ceased publication. Replies to e-mail inquiries to their editors indicate that three of the items (*Leonardo Electronic News*, *Media Relations Network News-MRN News*, and *Tunisian Scientific Society Newsletter*) have ceased, and that no back issues are available. Another e-serial, *CERFNet NEWS*, has also ceased publication, but the back issues are accessible.

"Title Accurate" indicates whether or not the Title in the directory entry exactly matches the Title on the located e-serial. For 32 or 76.2% of the e-serials located, this Title matched exactly. Ten or 23.8% of the items located did not match exactly. Title errors include the following:

1) one Title and Subtitle are reversed;
2) one Subtitle exists and is not included in the directory entry;
3) two Subtitles which are included do not exist;
4) three Subtitles are different from what is indicated; and
5) three main Titles are nonexistent.

Accuracy of the Scope Note is expressed by the "Scope Note Accurate" indicator. Thirty-three or 76.7% of the e-serials located have accurate Scope Notes. These notes are either taken from the headers of the e-serials or from descriptive paragraphs supplied by the editor to new subscribers. Ten or 23.3% of the locatable e-serials do not have accurate Scope Notes. These ten Scope Notes are too brief to give an accurate description of the coverage, contents, etc. of the e-serial. "Frequency Accurate" refers to the whether or not the Periodicity listed in the directory entry matches what is found in the located item. Thirty-five or 81.4% of the locatable e-serials have accurate frequencies. Eight or 18.6% of the e-serials do not exhibit an accurate frequency. Four of these items come out more frequently or more regularly than their directory entries indicate. This number, eight, also includes the four e-serials which have ceased publication.

The accuracy of the methods of distribution is measured by the indicator "Distribution Methods Accurate." Thirty-seven or 82.2% of the e-serials located have accurate distribution methods. The eight or 17.8% which are not accurate include the four items which have been discontinued. For the other four items, their Distribution Methods have changed to reflect more access for the user. More FTP sites are active and universities have decided to "subscribe" as an institution (similar to an academic library subscribing to a print journal). The e-serials which they subscribe to are made publicly available on the campus mainframe. "Subscription Accurate" indicates whether or not the Subscription information is accurate. Thirty-five or 74.5% of the directory entries for the

locatable e-serials contain accurate Subscription information. Of the other 12 or 25.5%, four are the e-serials which have ceased publication while eight have changed, updated, or modified their Subscription requirements. Two have moved from e-mail access to Listserv. For these two, the subscription address is no longer the editor's e-mail address. It is now a computer operated mailing list.

The accuracy of the information explaining how to retrieve back issues of the e-serials is shown in the indicator "Back Issue Retrieval Accurate." Only twenty-two or 46.8% of the directory entries for the e-serials located have accurate information relating to retrieving back issues. This is the lowest accuracy found in this study. Twenty-five or 53.2% of the items have incorrect back issue retrieval information. This occurs for a number of reasons: eleven items are available through methods not mentioned (via the editor, FTP, or Listserv Index); seven of the items have had their list of FTP sites change or expanded; three items have ceased without archiving the back issues; and three items are at the same FTP site but they are in different mainframe directories. These changes have occurred in the seven months since the *Directory* ... was published. "Contact Information Accurate" refers to whether or not the e-mail address of the Editor or Contact Person is accurate. Forty-one or 97.6% of the e-serials located have accurate information regarding this factor. The only one or 2.4% of the items which is not accurate is so because the editor has moved to a new job and his e-mail address has changed.

4.3 Index Analysis

The Index portion of the *Directory of Electronic Journals, Newsletters, and Discussion Lists, 3rd edition* leaves a lot to be desired. It is a "back of the book" style index and combines the titles, subjects, institutional affiliates, and

TABLE 10
Index Analysis

Characteristic	N	*f*	Percent
Total Number of Terms Indexed:			
One		3	5.0%
Two		28	46.7%
Three		16	26.7%
Four		10	16.7%
Five		3	5.0%
Total	60	60	100.0%
Title Indexed:			
Yes		60	100.0%
No		0	0.0%
Total	60	60	100.0%
Title Indexed More than Once (Subtitles, Acronyms, etc):			
Yes		4	6.7%
No		56	93.3%
Total	60	60	100.0%
Institution Affiliated Indexed:			
Yes		19	31.7%
No		41	68.3%
Total	60	60	100.0%
Title Indexing Adequate for Subject Approach:			
Yes		3	5.0%
No		57	95.0%
Total	60	60	100.0%
Number of Subject Terms Indexed: (Total Terms minus Title, Subtitle, and Institute Affiliated Terms Indexed)			
Zero		9	15.0%
One		29	48.3%
Two		16	26.7%
Three		6	10.0%
Total	60	60	100.0%
Would Indexing of Scope Note Aid Retrieval:			
Yes		50	83.3%
No		10	16.7%
Total	60	60	100.0%

discussion list addresses into one index. It appears that the index was compiled separately for each section and then the two lists were then combined and edited. Table 10 records the results of the index analysis.

In Table 10, Total Number of Terms Indexed refers to the total of words or phrases found in the index which refer back to any one entry. These terms fell into three broad categories: Title; Institution Affiliated; and Subject. Three or 5.0% of the e-serials have only one index term listed in the index. This term is a Title term. Twenty-eight or 46.7% of the entries are listed twice. These terms are a Title term and either a Subject or Institution Affiliated term. The number of e-serials which have three listings in the index is 16 or 26.7%. Title terms are joined by either Institution Affiliated terms or more than one Subject term. Ten or 16.7% of the entries possess index listings four times These terms are the Title and a combination of Subtitle, Institution Affiliated, and one or more Subject terms. Finally, three or 5.0% of the e-serials post five listings in the index. No e-serial in the study had more than five postings in the index.

All (60 or 100.0%) of the entries are indexed at least once by the Title as it is listed in the entry. This Title includes the following (in any order): full words, acronyms, initialisms, abbreviations, and compound words or phrases. Only four or 6.7% of the entries indicate a Title Indexed More than Once. This second index term is either an acronym of the main words in the Title, or a Subtitle which explains the acronym appearing first. This practice is very inconsistent, because Table 4 indicates that at least 20 or 33.3% of the entries have some sort of Subtitle. The acronyms are handled inconsistently. For example, *Biomedical Library Acquisitions Bulletin (BLAB)* is indexed under both the full Title, as above, and under the acronym (BLAB) while *Music Theory Online (MTO)* is indexed only by the full Title and not the acronym.

Another inconsistency is found when looking at the Institution Affiliated Indexed indicator. Table 5 shows that 22 or 36.7% of the entries mention an Institution Affiliated. It is interesting that only 19 or 31.7% of the entries are indexed. Why were the other three excluded? Also, during the indexing process, the corporate name of the library or other association has been left out. Only the academic institution itself is included in the index. This is not helpful when one is looking for an e-serial produced by a specific entity and one does not know the parent body for that entity.

Title indexing alone is not adequate for subject retrieval. Only three or 5.0% of the e-serials have a Subject approach in the first word of the full Title. This means that this first word could also be considered a keyword. Fifty-seven or 95.0% of the e-serials do not posses this keyword approach in the first word of the Title. Basing the subject indexing on only the first word in the Title is not good indexing practice. These three e-serials which are adequately covered by the subject through the first word of the Title all have at least one more Subject term. It is interesting that the three or 5.0% e-serials which only have one index entry (which is the full Title), do not correspond to the e-serials which possess a subject approach in the first word of the title. Thus, one cannot locate these entries by subject.

There is a Subject approach for 51 or 85.0% of the e-serials studied. This Subject approach has no discernible pattern. In some entries, key words of the title or scope note are indexed. Other entries have had a term assigned which is not mentioned anywhere in that entry. Twenty-nine or 48.3% of the entries have only one Subject term. Sixteen or 26.7% of the entries are indexed by Subject twice. Only six or 10.0% of the entries contain three Subject terms. The quality of the subject indexing is also suspect. Just because an

entry has three Subject terms listed in the index does not mean that those Subject terms are as specific as possible. For example, one e-serial has both a subject "botany" and a subject "systematic botany" listed in the index. This is not a good example of vocabulary control. It would not be so glaring an error if there existed a KWIC or KWOC index of all the titles and/or scope notes for all of the entries. In fact, in 50 or 83.3% of the entries such an Indexing of the Scope Note would Aid Subject Retrieval. For the other ten or 16,7%, the language used in the scope note is either outrageous, nondescriptive, or, as shown in Table 4, nonexistent. Since neither a KWIC nor a KWOC index exist, indexing like the "botany" and "systematic botany" suggests inconsistency in the depth of indexing from entry to entry. This should not suggest, however, that the KWIC or KWOC indexes would be sufficient to provide comprehensive subject indexing. Perhaps a more subject oriented arrangement will facilitate retrieval better than the current material type and alphabetical listings. Of the nine or 15.0% of the e-serials which do not have a subject approach: one has two title entries in the index; three correspond to the three e-serials which only have one entry (Title) in the index; and five have only the Title and the Institution Affiliation indexed.

Many of the subjects in the index have only discussion lists attached to them (from the *Academic Discussion Lists and Interest Groups*, the second major part of the *Directory of Electronic Journals, Newsletters, and Discussion Lists*). While scanning the index, it became clear to this researcher that many of the terms used for the discussion lists could also have applied to the e-serials. This is another indication of why the index appears to be the work of at least two people. Another disparity between the e-serials and the discussion lists concerns the indexing of the Listserv addresses. The discussion lists are indexed by this element but the e-serials are not.. For the sake of consistency,

the e-serials should be indexed by the Listserv, e-mail, BBS, or FTP address used for subscription purposes.

Retrieval of the e-serials would be aided if their editors and/or contact people were indexed by name and e-mail address. After all, if publishers are indexed in the directories for paper serials, why should the people responsible for the e-serial get the credit they deserve? An ISSN index would also be helpful. While only 21 or 35.0% (listed in Table 5) of the entries possess ISSN numbers at this time, e-serials will become recognized, accepted forms of scholarly communication and such an index will be vital to their accessibility.

4.4 Other Modes of Access

TABLE 11
Other Directory Analysis

Characteristic	N	*f*	Percent
Locatable through *OCLC*:			
Yes		25	41.7%
No		35	58.3%
Total	60	60	100.0%
Locatable through *Ulrich's*:			
Yes		8	13.3%
No		52	86.7%
Total	60	60	100.0%
Locatable through *Serials Directory*:			
Yes		9	15.0%
No		51	85.0%
Total	60	60	100.0%
Both *Ulrich's* and *Serials Directory*:			
Yes		5	8.3%
No		55	91.7%
Total	60	60	100.0%
Listed in Major Indexing & Abstracting Service:			
Yes		4	6.7%
No		56	93.3%
Total	60	60	100.0%

Three items were analyzed which list the sample population e-serials. These three tools are the *OCLC* online catalog, *Ulrich's International Periodicals Directory, 31st ed., 1992-93* and *The Serial's Directory: an International Reference Book, 6th ed., 1992*. Their analyses are listed in Tables 11 and 12.

TABLE 12
Material Type Analysis of Other Directories

Characteristic	e-journal	Percent	e-newsletter	Percent
Locatable through *OCLC*:				
Yes	9	64.3%	16	34.8%
No	5	35.7%	30	65.2%
Total	14	100.0%	46	100.0%
Locatable through *Ulrich's*:				
Yes	4	28.6%	4	8.7%
No	10	71.4%	42	91.3%
Total	14	100.0%	46	100.0%
Locatable through *Serials Directory*:				
Yes	6	42.9%	3	6.5%
No	8	57.1%	43	93.5%
Total	14	100.0%	46	100.0%
Both *Ulrich's* and *Serials Directory*:				
Yes	4	28.6%	1	2.2%
No	10	71.4%	45	97.8%
Total	14	100.0%	46	100.0%
Listed in Major Indexing & Abstracting Service:				
Yes	3	21.4%	1	4.7%
No	11	78.6%	45	95.3%
Total	14	100.0%	46	100.0%

OCLC is a valuable tool not only for locating the existence of an e-serial, but also for indicating which member institutions own the e-serial. A full 25 or 41.7% of the e-serials studied are located on this system. Table 12 shows the Material Type breakdown of these 25 e-serials. Nine or 64.3% of the 14 e-journals in the study are listed on *OCLC*, as are sixteen or 34.8% of the 46 e-

newsletters. When one examines the print directories available for serials, one does not receive the same results as with *OCLC*. Only 8 or 13.3% of the e-serials are located in *Ulrich's* while only 9 or 15.0% of the e-serials are located in *Serials Directory*. Only five of the items are in both directories, thus a total of twelve of the e-serials studies are located in the print directories. This is less than one-half of the e-serials located through *OCLC*. There is no preference given to either Material Type in these print directories. Half of the e-serials (6 of 12) located in them are e-journals and half (6 of 12) are e-newsletters.

Of particular notice is the mention of indexing and abstracting tools. These tools provide valuable access to the e-serials by indicating the author, title, abstract, and subject contents of the articles written in the e-serials. Authors often look for the serials which are indexed heavily before submitting papers for publishing. If e-serials can begin to be indexed as readily as print serials, this will be another step towards acceptance as a form of scholarly communication. Of the e-serials in this study, only 4 or 6.7% indicate any indexing of their contents. Three of these are e-journals and one is an e-serial. The follow are the services which index these four e-serials: *Abstracts in Biocommerce*; *Acoustics Abstracts*; *Aerospace Abstracts*; *Applied Mechanics Review*; *Association for Education and Rehabilitation of the Blind and Visually Impaired. Yearbook*; *B M T Abstract*; *Current Index to Journals in Education*; *Engineering Index*; *ERIC*; *Shock and Vibration Digest*; and *Uncover*. While this is a small list, it is encouraging that these services are noticing the value of the e-serials.

5. SUMMARY AND CONCLUSIONS

There were three goals established at the outset of this investigation. The first goal of this study was to determine if the organization, content, and accessibility of the e-serial directory entries was adequate or lacking in the amount of information provided to the user. A second goal was to determine not only how useful the Directory ... is as a serials directory, but also to determine what improvements may be necessary. A third goal of the study was to provide a summary of the current demographics of the e-serial industry. Six research questions were posed in the Introduction. They were as follows:

Were the *Directory of Electronic Journals and Newsletters* entries complete?

Were the *Directory* ... entries accurate?

Was the index useful and/or in need of improvement?

Who are the major players in the e-serial industry today (1993)?

Are e-serials considered a serious form of scholarly communication?

Could the *Directory* ... be considered the equivalent of a directory for print-journals and newsletters?

Case Study and Survey methodologies were employed to provide answers to these research questions. A random sample of 60 of the 240 directory entries was analyzed by four methods. A single tool was developed with three sections. The first section analyzed the entry for its completeness. The second part analyzed the entry's accessibility. The third section analyzed the subscription notices of the e-serials received from either the editors or by other means. This analysis determined the accuracy of the information. Part of the first part of the instrument included questions about what other directories, etc. also list the e-serials under consideration. This part grew into a fourth facet

of the study to determine if the e-serials are being considered a serious form of scholarly communication.

Question one, "Were the *Directory of Electronic Journals and Newsletters* entries complete?" is analyzed in Tables 4-8. The majority of the e-serials studied had incomplete entries. What was left out of the entry was information which could not easily be determined by Strangelove and his associates. Specific examples of this generalization are discussed following each table. Perhaps the biggest glaring error is the lack of information regarding the availability of back issues. This information is sometimes contained in the subscription information, but it should appear in its own portion of the entry.

Question two, "Were the *Directory* ... entries accurate?" is analyzed in Table 9. This was an intriguing part of the research. The directory entries were at least 74.5% accurate and were as even as accurate as 97.6%. There was one exception to this statement. The back issue availability was only 46.8% accurate. This information is probably the hardest to maintain accurately. Computer and e-mail addresses change for a number of reasons: editors move to new jobs at other universities; new computers are purchased and files are transferred; and old files are often purged if space is at a premium. In short, many of the problems which occur in attempting to locate print resources also occur with their electronic counterparts. Who has not tried to locate an item, only to find that it has been weeded or sent to remote storage? Who has not arrived at a building and found that its contents has been moved to a new building at a different address? Luckily for electronic users, systems such as the Gopher and new "Archie" and Veronica" searching tools will find these errant e-serials, wherever they may hide.

Question three, "Was the index useful and/or in need of improvement?" is analyzed by Table 10. This analysis showed how poor the indexing is for the directory entries and, thus, how poor their accessibility is. The subject indexing is arbitrary. Most of the subject terms are taken from key words in the scope notes. Even so, this practice is inconsistent.. Some e-serials have as many as three subjects access points while others have zero. Another facet of the index which is inconsistent is the treatment of subtitles and acronyms. Some of these are indexed and some are not. This part also appears arbitrary. Improvements to the index include: accuracy and consistency in subject analysis; accuracy and consistency in subtitle and acronym usage; indexing of ISSN numbers; indexing of editors/contact persons; indexing of full names of the institution affiliates; and indexing of the e-mail and Listserv addresses.

Question four, "Who are the major players in the e-serial industry today (1993)?" is analyzed by Tables 2-3. The United States is the major producer of e-serials. Seventy-six percent of the e-serials in the study are published in the United States. Many countries in Europe, South America, and North America are also involved in the e-serial market. The subject coverage of these e-serials is not dominated by any one field of study. Science, social science, humanities, business, and interdisciplinary e-serials all exist. The majority of e-serials in publication are e-newsletters. These items are quicker to produce, less controlled in their format and subject coverage, and are more frequent than the e-journals. On the other hand, many of the e-journals available are refereed, scholarly journals.

Question five, "Are e-serials considered a serious form of scholarly communication?" is analyzed by Tables 11-12. While it is true that less than half of the e-serials studied are accessible via *OCLC*, computer files such as

these are becoming more common and are receiving more and more consideration for full cataloging. OCLC is an important toll for this because it also lists the institutions claiming ownership of at least one issue of the e-serial. While very few of the e-serials are listed in traditional serials directories such as *Ulrich's* ... or the *Serials Directory* ... , this researcher was surprised to find any listings at all. Twelve of the e-serials in the study are located in these sources. In addition, four of these 12 are indexed by major indexing and abstracting services. Some information from Table 5 also indicates a serious, scholarly treatment for e-serials. Twenty-one e-serials have been granted ISSN numbers and nine e-journals are refereed or peer reviewed.

Question 6, "Could the *Directory* ... be considered the equivalent of a directory for print-journals and newsletters?" is analyzed by use of all 12 Tables. From a uniqueness stand-point, the *Directory* ... is an important reference tool for those items not listed in other directories. Those directories have been in existence for a long time and are well established in their organization, access points, and coverage. The *Directory* ... cannot be considered their equal until it fixes the major flaws in the index and in its accuracy. As with other directories, print sources for accessing electronic information will be outdated before they are printed. Keeping track of this constantly changing environment will take a tremendous amount of time and energy. Strangelove and his associates are to be commended for their efforts while constructively criticized to improve their product.

The most significant findings of this research include: the internationality of the e-serial industry; the difficulties associated with trying to "tame" the electronic environment to allow access to the e-serials; the problems found with trying to locate back issues of e-serials; the poor quality of the index; and the

serious nature by which the scholarly community is beginning to recognize the e-serial. Suggestions include mostly constructive criticism for Strangelove and his associates. If he plans to continue this directory, much care needs transpire to correct its glaring flaws. One aspect needing improvement is the locating of and the removal from the directory of those items which have ceased publication and do not archive their material. Three e-serials from this study fall into this category. One does not know if they are the only three in the directory, but accuracy is an important factor to be considered. Another facet of accuracy is staying on top of the constantly evolving electronic environment. Noting when FTP sites change, reorganize, add, delete files is important from the user's perspective. Noting when new forms of electronic access make other forms obsolete is also very important. Accessibility can be increased by devoting more time to producing a better index. Organizing the entries by subject matter rather than strictly alphabetical may aid in improving access. So would improving the subject approach, maintaining consistency with title, subtitle, and acronym indexing, and including ISSN number, Listserv and e-mail addresses in the index. Future research could include a re-analysis of any one of the four major components of this paper to answer whether or not Strangelove has corrected or is perpetuating the flaws noted in this research.

APPENDIX A The Instrument

Electronic Serial Title:

Item Number:_____ **Material Type:** (Journal) (Newsletter)

Subject: (SCI/Tech) (Human.) (Soc./SCI.) (Bus.) (Intdiscipl.)

ANALYSIS OF ENTRIES:

Question	Yes	No
Is there a clear, descriptive title?		
Is there an address for the editor/contact person?		
Is there a telephone number?		
Is there an editor/contact person?		
Is there a subtitle?		
Is there a description or scope note?		
Is the audience indicated?		
Is there an indication of first publication?		
Is the frequency indicated (periodicity)?		
Is there a size indicated (file size)?		
Is the amount of circulation/distribution indicated?		
Is there a price (not all items are free)?		
Is there an ISSN number?		
Is there an address for subscribing (or the electronic equivalent)?		
What is the format for delivery (Listserv, FTP, etc., include all that apply)		
Have there been any title changes?		
Is the country of origin indicated?		
Is there a sponsoring body (Institute Affiliation)?		

Is there more than one format for delivery?		
Is there an indication of how to obtain back issues?		
Is the serial refereed or peer reviewed?		
Is the title listed in other Directories (Serials Directory, Ulrich's, OCLC)?		
List indexing tools identified in above Directories:		
Are there any other problems/comments?		

ANALYSIS OF INDEX:

Does the title appear in the Index?		
More than once?		
How many keywords are indexed?		
Is the Institute Affiliated indexed?		
Does the title provide adequate subject indexing?		
Would indexing the description/scope note aid in subject retrieval?		

ANALYSIS OF THE SUBSCRIPTION NOTICE:

Is the title information accurate?		
Is the subscription information accurate?		
Is the frequency information accurate?		
Is the contact information accurate?		
Is the distribution information accurate?		
Is the back issue information accurate?		
Is the description/scope note accurate/complete?		

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